Doxycycline post-exposure prophylaxis (doxy-PEP) — Aotearoa New Zealand

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Doxy-PEP is **doxycycline 200 mg taken after sex** to reduce acquisition of selected bacterial STIs. NZ guidance supports **targeted, shared-decision prescribing**, primarily to prevent **syphilis** among people assigned male at birth who have sex with men; it is not a substitute for HIV PrEP, condoms, vaccination or regular STI testing.

Topic	NZ-oriented recommendation / evidence	Traps and pitfalls
Who has evidence of benefit?	Strongest evidence is in gay, bisexual and other MSM and transgender women who have sex with men, particularly those with recent bacterial STIs. NZSHS advises proactive discussion where there has been **syphilis or two other bacterial STIs in the previous 12 months**.	Do not extrapolate efficacy automatically to every population. Evidence in cisgender women has not demonstrated benefit, although poor adherence may partly explain the negative trial.
Additional NZ groups to consider	Consider during a defined period of heightened risk, such as sex events or travel involving multiple partners; for MSM with partners who could become pregnant; and for Māori or Pacific MSM because of inequities in syphilis burden.	Avoid using identity alone as the indication. Base the discussion on sexual history, recent STI diagnoses, partner networks, upcoming risk and patient preference.
Dose	**Doxycycline 200 mg orally as one dose**, taken as soon as practical after sex and no later than **72 hours** afterwards.	It is prevention, not treatment. A symptomatic patient or confirmed STI still requires diagnostic assessment and full guideline-directed treatment.
NZ dosing frequency	The 2025 NZ prescribing tool recommends **no more than one 200 mg dose every 72 hours**, with a maximum of **three doses per week**. A single dose after a weekend of multiple exposures may minimise antibiotic consumption.	International guidance may state a maximum of once per 24 hours; do not unintentionally substitute that for the more antibiotic-conservative NZ tool.
Quantity prescribed	NZSHS suggests no more than **72 × 100 mg tablets in any 12-week period**, with reassessment before repeats.	Automatic repeat prescriptions can allow escalating or unmonitored use. Check remaining supply, actual dosing frequency and continued indication.
Syphilis effectiveness	Trials in MSM and transgender women generally show approximately **70–80% relative reduction** in syphilis. NZ and Australian guidance therefore frame syphilis prevention as the principal benefit.	Doxy-PEP may partially suppress early infection and **attenuate syphilis serological responses**. Any new reactive serology, including isolated EIA reactivity, should be discussed with sexual health.
Chlamydia effectiveness	Trials generally show approximately **70–90% relative reduction** in chlamydia among the studied MSM/transgender-women populations.	Breakthrough infection remains possible. Continue multisite screening; doxy-PEP does not justify symptom-based testing alone.
Gonorrhoea effectiveness	Benefit is inconsistent: trials range from little or no protection to roughly **50–55% reduction**, largely reflecting local tetracycline resistance.	Do not describe doxy-PEP as reliable gonorrhoea prophylaxis. For every gonorrhoea diagnosis in a doxy-PEP user, NZSHS recommends obtaining culture and susceptibilities before treatment where possible.
Overall STI effectiveness	In the US DoxyPEP trial, the composite incidence of gonorrhoea, chlamydia and syphilis was reduced by about **two-thirds** among MSM and transgender women taking HIV PrEP or living with HIV who had a recent STI.	Composite outcomes can conceal weaker gonorrhoea protection. Counselling should give infection-specific figures rather than saying it prevents “most STIs”.
What it does not prevent	It does not prevent **HIV, mpox, herpes, HPV, hepatitis A/B/C, trichomoniasis** or non-infectious causes of urethritis/proctitis.	Do not let doxy-PEP replace HIV PrEP/PEP assessment, vaccination, condoms according to patient preference, or examination of genital/anorectal symptoms.

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Baseline assessment	Take a complete medical and medication history, assess allergies and contraindications, and perform routine STI testing before prescribing.	Check whether doxycycline is being taken for acne or another indication to avoid duplicated exposure. Consider oesophageal disease, severe photosensitivity history, pregnancy potential where relevant and interacting medicines.
Administration counselling	Take with a full glass of water while upright; avoid lying down for at least 30 minutes. Food may improve tolerance. Counsel about photosensitivity.	Oesophagitis is a characteristic avoidable harm. Taking the dose immediately before bed, with little water, is a common error.
Cations and absorption	Separate doxycycline from antacids and supplements containing aluminium, calcium, iron, magnesium or zinc according to product guidance.	Patients may unknowingly take it with mineral supplements or indigestion remedies, reducing absorption. Ordinary food is generally less important than concentrated cation products.
Adverse effects	Common concerns include nausea, diarrhoea, photosensitivity and oesophageal irritation or ulceration.	Persistent severe headache or visual symptoms, significant rash, dysphagia/odynophagia or severe diarrhoea warrant stopping and clinical assessment rather than repeatedly self-dosing.
Antimicrobial resistance	Long-term population effects remain uncertain. Concerns include selection of tetracycline-resistant gonorrhoea, *Mycoplasma genitalium*, *Staphylococcus aureus* and other commensal/pathogenic organisms, plus possible cross-resistance patterns.	Absence of proven major harm so far is not proof of long-term safety. Target prescribing to those most likely to benefit and minimise doses.
Microbiome effects	Effects on gut, skin and other microbiomes remain incompletely characterised. NZSHS identifies this as an unresolved risk.	Avoid reassuring patients that intermittent dosing has “no microbiome effect”; the correct message is that clinical significance remains uncertain.
STI monitoring	NZSHS requires **3-monthly** multisite chlamydia/gonorrhoea testing—pharyngeal, urine/urethral and rectal according to anatomy and practice—plus HIV and syphilis testing for continued supply.	Doxy-PEP may reduce symptoms or organism burden. Delayed or incomplete testing can miss breakthrough infections and undermine resistance surveillance.
STI contacts	Manage contacts according to the NZ STI Guidelines. The NZ statement specifically advises treating syphilis or gonorrhoea contacts within relevant window periods; for chlamydia contacts, retesting outside the window rather than automatic presumptive treatment may be appropriate.	Do not assume taking doxy-PEP means no contact treatment is required. Conversely, avoid adding unnecessary full antibiotic courses without considering exposure timing and NZ guidance.
Duration of use	Use may be ongoing or limited to a planned high-risk period, but ongoing need should be reviewed with every prescription.	It should not become an indefinite “set and forget” medication. Review STI incidence, actual antibiotic use, tolerability, changing sexual practices and patient priorities.
Doxy-PrEP versus doxy-PEP	Routine **daily doxycycline prophylaxis** is generally **not** recommended because it may increase overall antibiotic exposure and has less supporting evidence than event-driven doxy-PEP.	Do not convert frequent doxy-PEP use into daily doxycycline without specialist consideration.
Alternative antibiotics	Azithromycin or other antibiotics should **not** be substituted for doxycycline as STI prophylaxis.	“Antibiotic after sex” is not a class effect. Unsupervised azithromycin risks treatment failure and further antimicrobial resistance.

Practical prescribing framework

Step	Action
1. Establish likely benefit	Document recent syphilis or recurrent bacterial STIs, upcoming periods of high exposure, partner considerations and patient goals.
2. Baseline screen	HIV, syphilis, and multisite gonorrhoea/chlamydia testing; assess symptoms before treating it as a prevention consultation.
3. Prescribe and counsel	Doxycycline **200 mg once within 72 hours after sex**, following the NZ maximum of **one dose per 72 hours** and **three doses weekly**.
4. Review every 3 months	Repeat multisite STI/HIV/syphilis testing, monitor adverse effects and antibiotic use, collect gonococcal culture for breakthrough gonorrhoea, and reassess whether benefits still outweigh harms.

Bottom line: Doxy-PEP is highly effective against **syphilis and chlamydia** in the populations studied, but protection against **gonorrhoea is variable**. Its principal management traps are excessive dosing, mistaken reassurance, missed multisite screening, altered syphilis serology, and uncertain long-term antimicrobial-resistance and microbiome effects.

Reference table

Reference	Type	Key Findings	Clinical Relevance
New Zealand Sexual Health Society (NZSHS). Prescribing Doxycycline Post-Exposure Prophylaxis (Doxy-PEP) Tool. 2025.	NZ Clinical Guideline	Recommends targeted doxy-PEP for MSM and transgender women at high risk of syphilis or recurrent bacterial STIs. Recommends **200 mg within 72 hours of sex**, maximum **one dose every 72 hours** and **three doses/week**, with 3-monthly review.	Current NZ prescribing guidance.
NZSHS. Aotearoa New Zealand Consensus Statement on Doxycycline Post-Exposure Prophylaxis (Doxy-PEP). 2025.	NZ Consensus Statement	Reviews available evidence, discusses antimicrobial stewardship, resistance concerns, eligibility criteria and monitoring recommendations.	Principal NZ evidence summary supporting clinical use.
Luetkemeyer AF, et al. Postexposure Doxycycline to Prevent Bacterial Sexually Transmitted Infections. New England Journal of Medicine. 2023;388:1296–1306.	Randomised Controlled Trial	Among MSM and transgender women on HIV PrEP or living with HIV, doxy-PEP reduced combined bacterial STI incidence by approximately **65%**, including marked reductions in syphilis and chlamydia.	Landmark trial supporting doxy-PEP effectiveness.
Molina J-M, et al. ANRS IPERGAY Open-Label Extension. Lancet Infectious Diseases. 2018.	Randomised Trial	Demonstrated significant reductions in **syphilis (~73%)** and **chlamydia (~70%)**, with limited effect on gonorrhoea.	First major proof-of-concept study.
Stewart J, et al. Doxycycline Prophylaxis for Bacterial Sexually Transmitted Infections (dPEP Kenya Trial). New England Journal of Medicine. 2023.	Randomised Trial	No significant reduction in bacterial STIs among cisgender women, likely related to poor adherence, although biological differences may also contribute.	Explains why doxy-PEP is not routinely recommended outside populations with proven benefit.

Reference	Type	Key Findings	Clinical Relevance
Centers for Disease Control and Prevention (CDC). Clinical Guidelines on the Use of Doxycycline Post-Exposure Prophylaxis for Bacterial STI Prevention. MMWR. 2024;73(RR-2).	National Guideline	Recommends offering doxy-PEP to MSM and transgender women with a bacterial STI in the previous 12 months. Advises **200 mg within 72 hours**, maximum once daily, alongside 3–6 monthly STI screening.	Influential international guideline informing many national recommendations.
Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM). Australian Consensus Statement on Doxycycline Post-Exposure Prophylaxis. Medical Journal of Australia. 2024.	Consensus Statement	Supports targeted doxy-PEP use while emphasising antimicrobial stewardship, shared decision-making and surveillance for resistance.	Closely aligned with NZ practice.
Bolan RK, Beymer MR, et al. Doxycycline Prophylaxis for Bacterial STIs: Emerging Evidence.	Review Article	Reviews available clinical trials, effectiveness, microbiome effects and antimicrobial resistance concerns.	Useful summary of evolving evidence.
World Health Organization (WHO). STI Guidelines and Antimicrobial Resistance Resources.	International Guidance	Notes emerging evidence while highlighting uncertainty regarding long-term antimicrobial resistance and microbiome effects.	Supports antimicrobial stewardship considerations.

Summary of the Evidence

Outcome	Evidence
Syphilis prevention	Strong evidence (≈70–80% reduction) in MSM and transgender women.
Chlamydia prevention	Strong evidence (≈70–90% reduction).
Gonorrhoea prevention	Variable benefit (0–55%), influenced by tetracycline resistance.
HIV prevention	No effect—PrEP remains essential where indicated.
Long-term resistance	Uncertain; requires ongoing surveillance.
Microbiome effects	Uncertain; currently under investigation.

Suggested reading order for clinicians

1. **NZSHS Prescribing Doxy-PEP Tool (2025)** – practical prescribing guide.
2. **NZSHS Consensus Statement (2025)** – NZ evidence and rationale.
3. **Luetkemeyer et al., NEJM 2023** – landmark DoxyPEP RCT.
4. **CDC 2024 Clinical Guideline** – comprehensive international recommendations.
5. **ASHM Australian Consensus Statement (2024)** – Australasian perspective on implementation and antimicrobial stewardship.